Data Documentation Template

This data documentation template is designed to assist BC analysts in recording the data and methodologies utilized in their BCA. BC analysts should keep in mind that a well-documented BCA means a knowledgeable subject matter expert (another BC analyst) should be able to re-create the BCA from the supporting documentation provided (with a Mitigation application submitted for funding) without any additional explanation. BC analysts should provide an electronic or paper copy of the full BCA to compliment any template or summary submitted to FEMA for review.

A **Data Source and Documentation Summary Chart** is provided at the end of the template chart for completion.

Earthquake Data Analysis Methodology: Non-Structural Retrofits of Buildings

This data documentation template is intended for Non-Structural Seismic Retrofits, including anchoring/bracing of contents, equipment, racks and library shelves, and non-structural building elements such as parapet walls, chimneys, elevators, HVAC ductwork and equipment, fire sprinkler systems, ceilings, generators etc. For BCA of Non-Structural Mitigation Projects, the Non-Structural Module (not the Full Data Module) must be used.

For Non-Structural Mitigation projects it is always the value and seismic vulnerability (fragility) of only the specific elements being mitigated that are significant. The value and seismic vulnerability of the building as a whole does not enter into the analysis unless the building is so vulnerable to earthquake damage that undertaking non-structural mitigation measures does not make sense.

Data Type	Value	Description	DOCUMENTATION	Source
Discount Rate	**The OMB-mandated discount rate of 7% must be used for all BCAs.**	The discount rate determines the time-value of money In a FEMA benefit-cost analysis, a discount rate is used to calculate a value today (the Net Present Value) of future benefits so that they can be compared to the costs of a mitigation project.	■ Electronic or paper copy of the BCA. ■ **The OMB-mandated discount rate of 7% must be used for all BCAs.**	■ **The OMB-mandated discount rate of 7% must be used for all BCAs.**
Mitigation Project Useful Lifetime	Years	Estimated amount of time that mitigation action will be effective. Includes any maintenance activities that will be done to prolong effectiveness).	■ Reference FEMA standard value if utilized. ■ If FEMA standard value is not utilized then include a justification of the value entered. ■ May also attach a letter, e-mail, etc. from credible agency documenting this estimate (if resource other than FEMA standard value).	■ FEMA guidance. ■ Government representative or private professional with expertise relevant to the proposed project.
Mitigation Project Cost	Total dollar value	Estimated total cost of the proposed mitigation action **(not just the Federal share)** and any maintenance activities that will be done to prolong effectiveness.	■ Narrative summary in the BCA module should state that this value comes from a potential or submitted project application. ■ Must document source and reasoning in estimate of maintenance activity cost.	■ Should support the value submitted with the project application. ■ Government representative or private professional with expertise relevant to the proposed project. ■ For maintenance values, consult Government representative or private professional with expertise relevant to the proposed project.

Data Type	Value	Description	DOCUMENTATION	Source
Expected annual number of earthquakes	Frequency	Annual probabilities of various levels of ground shaking, expressed in PGA (Peak Ground Acceleration, relative to "g" the acceleration of gravity). The Non-Structural Module requires user entry of the expected annual number of earthquakes.	■ Provide description of how derived. This should include references or copies of all pertinent sources utilized.	■ See Data Documentation Template for Earthquake Structural Mitigation Projects for further details. ■ Use software modules for Seismic Hazard Calculations. ■ User-determined values should be developed following the detailed instructions (calculation procedures) in the Earthquake Data Derivation Chapter.
Item replacement value	Dollars	The replacement value of the non-structural building elements or contents to be protected by the project.	■ Provide description of how derived. This should include references or copies of all pertinent sources utilized.	■ Local building department, builder, contractor, or architect. ■
Non-Structural seismic damage function	Percent damage for each level of ground shaking.	Estimate of damages for each level of ground shaking. Use appropriate page of Non-Structural Module for type of project.	■ None required if standard values in Non-Structural Module are used. ■ If estimated provide an explanation of source utilized and method applied.	■ Earthquake Data Derivation Chapter in the Mitigation BCA Toolkit CD. ■ Non-standard seismic damage functions generated by a structural engineer.
Secondary Damage Estimates	Dollars	Failure of some types of non-structural elements (e.g., fire sprinklers) may result in collateral damage to other items in building.	■ Provide description of how derived. This should include references or copies of all pertinent sources utilized.	■ Engineering evaluation based on size, weight, other characteristics of non-structural element and characteristics of items in fall or damage zone.
Dollar value of a Casualty	Dollars (present year)	Estimated value of the loss of one person.	■ If typical values in FEMA software are used then provide print out of software. ■ If user-determined values are used provide full documentation of reasons for differences from FEMA typical values.	■ FEMA "What is a Benefit" guidance
Dollar value for minor/major injuries	Dollars (present year)	Average of the estimated values for the treatment of major and minor injuries per person.	■ If typical values in FEMA software are used then provide print out of software. ■ If user-determined values are used provide full documentation of reasons for differences from FEMA typical values.	■ FEMA "What is a Benefit" guidance

Data Type	Value	Description	DOCUMENTATION	Source
Occupancy	Number of occupants	• Average 24/7/365 occupancy • Relevant occupancy is ONLY occupancy in the fall or damage area for the non-structural element – NOT the entire building occupancy.	■ Provide description of estimates methodology utilized (to establish number of employees and visitors at different times of days and days of week).	■ Building owner or manager
Other data	Varies by type of non-structural mitigation project	See separate pages in Non-Structural Module for different types of projects.	■ No documentation required if standard values in module are used. ■ If estimated provide an explanation of source utilized and method applied.	■ Standard values in module or ■ Analysis by engineer

Earthquake Data Analysis Methodology: Non-Structural Retrofits of Buildings

Data Documentation Template – Data Source and Documentation Summary

Applicant (State):	
Sub-Applicant:	
Project Title:	

ITEM	DATA VALUE	VALUE USED IN BCA	DATA SOURCE	Documentation Included (Yes, No or NA)
Discount Rate	*The OMB-mandated discount rate of 7% must be used for all BCAs.*			
Mitigation Project Useful Lifetime	*Years*			
Mitigation Project Cost	*Total dollar value*			
Expected annual number of earthquakes	*Frequency*			
Item replacement value	*Dollars*			
Non-Structural seismic damage function	*Percent damage for each level of ground shaking.*			
Secondary Damage Estimates	*Dollars*			
Dollar value of a Casualty	*Dollars (present year)*			
Dollar value for minor/major injuries	*Dollars (present year)*			
Occupancy	*Number of occupants*			
Other data	*Varies by type of non-structural mitigation project*			